REMARKS

Claims 1-3, 6-14, and 17-22 remain active and pending in this application. Claims 4-5 and 15-16 have previously been cancelled. Applicant gratefully acknowledges the indication that claims 8 and 19 include allowable subject matter. Claims 1-3, 6, 7, 9-14, 17, 18 and 20-22 stand under Final rejection. In view of the remarks that follow, Applicant respectfully requests reconsideration and withdrawal of the Final rejection.

Claims 1-3, 11-14, and 22 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Parvathanathan et al. (WO 03/015364).[1] Claims 6, 7, 17, and 18 have been rejected under 35 U.S.C. § 103 as being unpatentable over Parvathanathan et al. in view of Shanmugan (XP-002254352). Claims 9-10 and 20-21 have been rejected under 35 U.S.C. § 103 as being unpatentable over Parvathanathan et al. in view of Massicotte et al. (US 2004/0136444). Based on the foregoing amendments, Applicant respectfully submits that these rejections are moot.

Applicant discloses a novel and unobvious approach for estimating a received pilot signal that is degraded by noise, fading and other factors in the communications environment. This may be achieved with a pilot estimation component that uses multiple filters having different frequency responses. Each filter generates a filter estimate and a prediction error from the received pilot signal. Combining coefficients are applied to each filter estimate based on the filter estimate's prediction error. The filter estimates are then combined to produce the estimated pilot signal.

In a previous response to an earlier Office Action, Applicant provided an explanation of how the applied references differed from the subject matter recited in the claims and, therefore why the claims were patentable over these references. This previous explanation is provided below for convenience.

Previous Explanation and Remarks

The Patent Office relies primarily on Parvathanathan in support of the pending rejections. Parvathanathan discloses an adaptive pilot filtering scheme. The pilot filtering scheme of Parvathanathan includes a bank of filters. Each filter receives and filters the pilot signal. In addition, each filter derives a prediction error between the received pilot signal and the filtered pilot signal. However, in contrast to Applicant's approach, the prediction errors are not used to compute coefficients that are applied to the filtered pilot signals. Instead, the prediction errors are used to select the filtered pilot signal with the best performance. The selected filtered pilot signal is not weighted, nor is it combined with any other filtered pilot signals. The selected filtered pilot signal is used, without modification, for the estimated pilot signal.

Referring now to the specific claims, Applicant submits that they recite subject matter which is neither disclosed nor suggested by the prior art of record. Claims 1, 12, and 22, for example, recite a switching component that "*applies a combining coefficient to each of the filter estimates* based on the filter estimate's prediction error, and *combines the filter estimates* to produce a pilot estimate." (emphasis added). Parvathanathan does not apply a coefficient to any of its filtered pilot signals, nor does it combine these signals in any way. As explained above, the filtered pilot signal with the best performance is selected. Accordingly, Parvathanathan can be said to anticipate claims 1, 12, or 22.

Similarly, the combination of Parvathanathan with Sam and/or Massicotte does not render claims 1, 12, or 22 unpatentable. The Patent Office relies on Sam for disclosing Kalman filters and Massicotte for disclosing hard and soft switching methods. None of these references, either alone or in combination, disclose a switching component that "*applies a combining coefficient to each of the filter estimates* as a function of its respective prediction error and *combines the filter estimates* to produce a pilot estimate." (emphasis added).

Claims 2-3 and 6-11 are dependent from claim 1, and claims 13-14 and 17-21 are dependent from claim 12. Accordingly, each of these claims include all the limitations of the claim from which it depends, and is therefore patentable for the same reasons set forth

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[1] The rejection under 35 U.S.C. § 102(e) appears to be improper because it is based on a publication of an international application filed under the treaty defined in section 351(a) that does not designate the United States. Accordingly, Applicant has treated Parvathanathan as a publication under 35 U.S.C. § 102(a).

hereinbefore, as well as the additional limitations recited therein. These additional limitations will not be addressed at this time in view of the patentability of the independent claims.

Response to Final Office Action

Even in view of the remarks above, the Examiner maintained the rejections in view of Parvathanathan and the other secondary references, and made them final. In particular, in numbered paragraph 8 (page 7) of the current Office Action, the Examiner disagrees with the Applicant's characterization of Parvathanathan. Applicants respectfully request the Examiner more carefully consider the explanation provided above and the following remarks as well.

Claim 1 recites, in part, that "the switching component applies a combining coefficient to each of the filter estimates. Thus to anticipate claim 1, Parvathanathan must identically disclose multiple filters producing a respective filter estimate and then applying a coefficient to each filter estimate.

Within Parvathanathan there are pilot symbols (i.e., x_n), there are filter estimates (i.e., y_n^i), there are pilot estimates or filtered pilot symbols (i.e., y_n), there are filter coefficients (i.e., w), there are prediction errors (i.e., e), and there is a long term prediction error average (i.e., E).

The operation of both figures 4A and 4B are similar. The output of filters 412_i are all provided to a selector 414. It is these respective outputs that are the filter estimates y_n^i. All the different filter estimates are analyzed to determine which one most closely matches the predicted error. In response to this analysis, the controller 160 selects one of the filter estimates to be the estimated signal, or pilot estimate, y_n. In no part of this process is any kind of coefficient ever applied to the outputs of the filters 412_i. To say it another way, the filter estimates from the filters do not have a combining coefficient applied to them; once an estimate emerges from a filter, it remains unchanged.

The selector logic 414 performs a simple selection operation: of all the filter estimates that it receives from the filters, one is passed out. The one passed out is unchanged from its value when it was received from one of the filters.

Paragraph [1066] does not teach or suggest programmability of coefficients applied to filter estimates. The language provided in this paragraph of the disclosure provides an alternative configuration for selecting one of the filter estimates. In describing the figures, each filter is

shown as always providing its respective output to the selector so that the Select signal from the controller to the selector may choose which filter estimate to output as the pilot estimate. Paragraph [1066] merely recognizes that "[e]ach filter 412 may alternatively be designed to receive the Select signal and provide the filtered pilot symbols only when directed by the Select signal." Thus, in the alternative, Parvathanathan teaches that the filters may be configured to only provide their output if selected. There is no teaching or suggesting of applying a coefficient to the output of a filter.

Applicants urge that in Parvathanathan once an estimated filter symbol is generated, it is either selected or ignored; it does not have a coefficient applied thereto, as required by claim 1.

Claim 1 further recites that the switching component **combines the filter estimates** to produce the pilot estimate. As described above, the filter estimates in Parvathanathan are not combined (especially not combined using applied coefficients); instead, the different filter elements are either selected or ignored. When a pilot estimate is ultimately produced, its value is one of the unchanged original filter estimates, not some combination of the various filter estimates.

Within the comments provided in the Final Office action, there is some mention of paragraph [1070] and a generalization about the language subsequent to that paragraph. A careful analysis of Parvathanathan reveals that starting at paragraph [1070] an additional embodiment of a filter is shown with respect to FIG. 5 that is a discordant alternative to, rather than a complimentary expansion of, the previous embodiments. In particular, this embodiment differs in a significant manner from those discussed previously therein -- according to paragraph [1073], this particular alternative embodiment **includes only one filter**. Thus, this alternative embodiment does not even provide multiple filter estimates for combination, as required by claim 1.

For the reasons provided above, Applicant respectfully urges that Parvathanathan does not anticipate claims 1-3, 11-14 and 22. Additionally Applicants urge that the combination of Parvathanathan with the various secondary references do not provide support for a prima facie case of obviousness under 35 U.S.C. § 103 with respect to the dependent claims. Accordingly, reconsideration and withdrawal of the rejection of claims 1-3, 6-14, and 17-22 are respectfully requested.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicant submits that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application is earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

Dated: 10/11/05

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